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THE AGRICULTURAL STUDENT

A MONTHLY MAGAZINE DEVOTED TO AGRICULTURAL EDUCATION

CATTLE NUMBER



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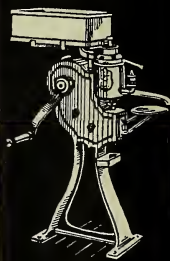
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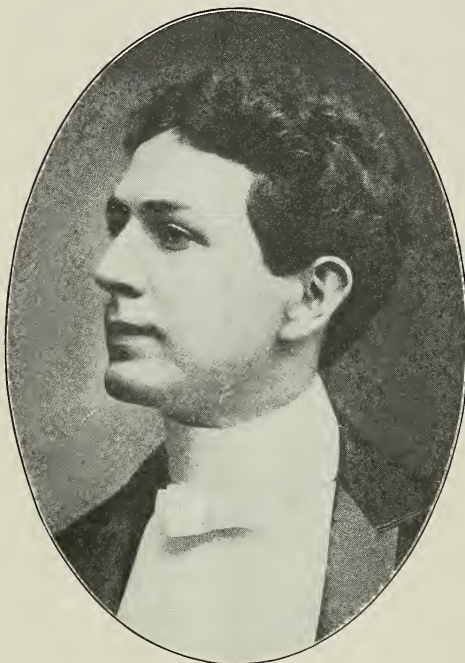
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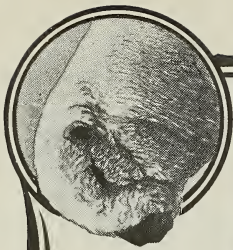
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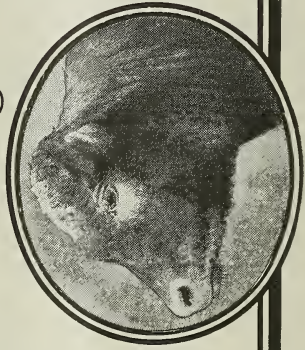
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CONTENTS

April, 1910

BUTTONWOOD TIPCover

FRONTISPIECE.

Page

MEAT AND ITS USES—

Prof. C. S. Plumb..... 7

THE FUTURE FOR CATTLE IN OHIO—

H. M. Brown 10

THE PRICE OF MEAT—WHAT GOVERNS IT?—

Louis F. Swift 12

SANITARY MILK PRODUCTS—

Richard Faxon 16

GUERNSEY CATTLE—

H. M. Call 20

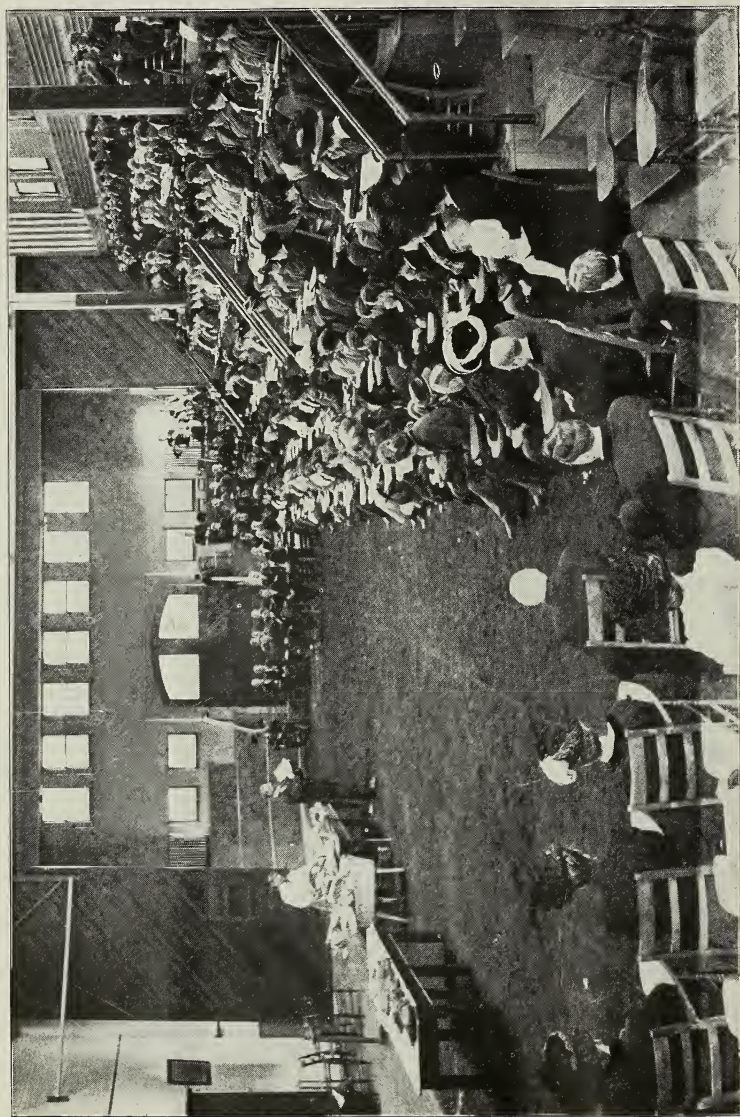
EDITORIAL 22

NEWS NOTES 24

SOME FARM CONDITIONS IN GEORGIA—

W. C. Lassetter 25





Meat Cutting Demonstration, Judging Pavilion, O. S. U.

THE AGRICULTURAL STUDENT

Vol. XVI.

OHIO STATE UNIVERSITY, COLUMBUS, APRIL, 1910

Number 7

Meat and Its Uses

By Prof. C. S. Plumb

During the past year unusual interest has been taken in the subject of meats. Present high prices of things in general have especially subjected the cost of meats to much unfavorable criticism. Much of this adverse comment is unjustifiable. While it is true that the prices on pork have passed to hitherto unknown heights, this was largely due to an actual shortage of hogs in this country. At the present writing we are about 3,000,000 head short of the normal supply. In a more or less degree the same applies to cattle and sheep. A recent bulletin from the Bureau of Statistics at Washington calls attention to the fact that while the population of the United States has increased about 12,000,000 in the past ten years, there has been a serious decline in our food animals. According to the figures, ten years ago we had about 2.3 food animals to each inhabitant of the United States, while at present we have 1.9. Certainly all persons who have followed the trend of the important stock yards, know that the volume of business for the past year or two has perceptibly declined.

In these days of high values, it behooves the purchaser of meats to know more of what he is about in making his market selection. Too many men are like a gentleman the writer was riding with one day, who drove up in front of

a country butcher shop, and called to the proprietor to bring him out a ten-cent steak. To him a steak was a steak, but it was a poor apology for one that was delivered into the buggy, even in those days of low values.

The average person knows but little about meat, and many do not know the difference between veal and beef or mutton and pork. Only a few days ago, at a fine grill room in one of Ohio's prosperous cities, I was a guest of a gentleman at dinner. The menu card listed beef and veal, and I ordered the latter. I was served with a choice piece of roast pork. I called the waiter and quietly asked him if they were serving pork that day, to which he replied they were not. The fact of it is, many people do not know whether they are eating veal or pork.

If one goes into the city markets, such as Columbus has, he will find large displays of meats. Most of this is of inferior grade, cut into thin steaks or other cuts, such as really further reduces its value. Steaks less than one-half inch thick are common in market. These are usually fried hard and served tough and indigestible. It is unfortunate that so much meat is sold in such improper form, and that it should be so injured in the cooking. Yet the average family, restaurant and hotel makes a bad mess of it in buying and cooking meat.

The writer does not want any further evidence than his own personal experience in dining under a wide range of conditons.

We hear a great deal said in these days of the importance of buying the cheaper cuts, for they contain as much and even more nutriment than the higher priced cuts. Where are the high and low priced cuts of meat found? Without going into too much detail.

ber, but much in demand by good meat judges. From the sixth to the twelfth rib, along the top of the back, is found the prime of rib roast, the choicest cut usually served as a roast from beef. These cuts, the porterhouse and rib, are expensive, and waste badly in table service on account of the bone and fat which are inedible, but these meats are very much in demand on account of their tender fiber and choice quality.



Porter House Steak

the more tender and valuable cuts come from the wider part of the back among the little used muscles. Here the cellular structure is shorter, more delicate, with fat cells or particles more or less freely distributed according to the degree of fatness of the animal. Along the middle of the back and between the hips, over the ribs, we find the choicest flavored meat, while the tenderloin muscle lying below some of these ribs, furnishes the tenderest but not best flavored meat. Here are cut the porterhouse steaks, limited in num-

In a good market, porterhouse brings about 25 cents a pound today, and prime of rib, 18 to 20 cents.

The cheaper cuts are found in the hind quarters, about the rump and the thigh, and about the shoulder, neck and brisket, and along the belly. The thick muscle of the thigh, known as the round in beef, ham with pork, or leg of mutton with sheep, contains a large per cent. of nutriment, with comparatively small waste. A round steak, in fact, has but very little waste. However, this part, which consists of constantly used

heavy muscles in the animal, is larger and coarser in fiber, and to a certain extent lacks the quality of the best rib or back cuts. While the porterhouse steak should be broiled to be at its best, the round is usually fried, and being cut through as a rule is tough and too

be more frequently cooked. A pot roast lacks the fineness of fiber and quality of a prime of rib roast, but when from a well fattened steer it becomes very satisfying to any reasonable man if well cooked. Such a roast may contain almost no waste, and may



Round Steak

often unpalatable from its lack of fat cells among the lean tissue. Round steaks may be rolled with bread crumbs for stuffing, and roasted or baked in the oven to make a much more tender and palatable dish than fried steak. Yet but few are prepared this way. From the rump are obtained cheap and valuable cuts, that are cooked in pots or in the oven as pot roasts. These should

be bought for 12 to 15 cents a pound. Shoulder pieces for pot roasts are a trifle cheaper, as they contain some waste from the bone, and are not so thick and desirable in thick muscle. The neck and brisket pieces are used for stewing or boiling, the brisket also serving a good purpose with cattle as corned beef. The thin cuts along the

(Continued on page 11.)

The Future for Cattle in Ohio

By H. M. Brown

The cattle industry of this state, for one reason or another, has waned greatly in the past three decades and, for all that, so has the same industry throughout the whole country, when speaking strictly of farming sections.

Of course it did not pay, directly, as well as some other things, else it would not be so.

No use to argue that it was a mistake to quit raising beef in such large quantities as formerly, for with the enlightenment at hand, it really was not.

Farmers could not afford to do it, because with the prices current it was, in the main a losing business as compared to some other lines available to the farmer with his vast stores of fertility.

Yet, it has turned out that a farmer can feed cattle at a loss and still make money at it.

Witness the old life-long cattle raiser who, in each instance, will be found well to do, provided he has exercised a reasonable degree of prudence in business and has been judicious in the selection of his breeding stock.

If, perchance, corn is worth sixty-five cents per bushel and the cattle fed only pay fifty cents for the corn, the feeder has yet a profit on the cost of producing the feed and, moreover, has sold his crop in a market from whence he will draw large dividends, in the form of increased dividends, year after year. And is it not the only way of disposing of the crops through which the farmer is not slowly but surely impoverishing himself, as is easy of demonstration on any strictly grain farm to be found anywhere throughout this broad land?

Raising cattle was a good thing to do always, but it has become a fixed and

acknowledged fact only recently when it was demonstrated that the lands of this state are rapidly falling off in production because of the tendency to curtail live stock husbandry.

It took years to show it up, but it is now unmistakable and something **must** be done to recoup.

Fortunately, for the strictly agricultural localities, a mighty change has taken place. The great ranches of the Northwest, West and Southwest, in large degree, are rapidly liquidating for the last time, on account, mainly, of the encroachments of the permanent settlers and consequent difficulty of getting free range, free water and immunity from unpleasant controversy regarding contended rights that hitherto were free for the taking.

Teachers of agriculture the country over with one universal accord exhort us, with furious earnestness, the imperative necessity for raising more live stock for the salvation of the land and, to their credit it be said, that the conditions now confronting us have amply borne them out in the stand they have for so long maintained.

There is no longer any doubt; it must be done and every good citizen of this splendid country, with the means in hand, should with patriotic zeal go to work with might and main to do his duty as it is plainly pointed out.

Consumption has well nigh overtaken production and the latter is alarmingly handicapped in the race by reason of failing inherent resources, while the former is gathering fearful added momentum every day we live.

Consumption of the meat products of the farm is such a growing healthy

monster that no one need fear anything like a great surplus ever again in normal times.

Even though panics may sometimes overtake us, the business world is learning so well how to handle them that they are becoming shorter and shorter in duration each recurring visitation that we may hope they will soon cease to menace the country for any considerable period of time.

The business of live stock farming should be and is the safest, most pleasurable and most promising avocation of them all and the world has begun to concede the fact.

Cattle husbandry is now a going concern, and we have every reason to feel

that its hardships are a thing of the past.

The young man that starts now—with good stock, earnest endeavor and judgment, will have nothing in the future to fear.

The generations that have gone before had much to discourage them and, at times, the way was dark and doubtful, but on the whole they did well and have testified to the advantages of cattle raising even under the most adverse circumstances.

With most of the barriers removed and an ever increasing and insistent demand I can see naught but prosperity awaiting the energetic cattle raising farmer of the future.

Meat and Its Uses

(Continued from page 9.)

sides are used for stews and corning and may be bought very cheap.

One cannot blame people for wanting the high priced cuts, for they hold the same relative place in meats that cream does with milk, and the demand will continue for them so long as our appetites demand the choicer morsels. Our people eat too much pork and not enough mutton. Very slowly lamb and mutton is meeting with favor in America, but as yet these meats are not popular. In Europe they are favorites, especially in Great Britain and France, where mutton is very commonly served.

The real unfortunate part of the use of meats in America is the ignorance among the people as to the proper methods of preparation. We need in this country a great campaign of education among the people on the cooking of meats. With a reasonable degree of intelligence in this regard, there would be far more pleasure in the eating, and no doubt much less indigestion among the masses. To be sure, many will think this statement overdrawn, but wide experience in travel will easily demonstrate to the satisfaction of the unprejudiced.

The Price of Meat---What Governs It?

By Louis F. Swift

During the past few years farm land has appreciated marvelously in value. Statistics show that farm land which could be purchased ten years ago for fifty dollars per acre now commands from one hundred to two hundred dollars, according to the productivity of the soil and the proximity to large cities. This increase in the value of land has enabled the farmer to take up the time-honored mortgage, build good farmhouse residences, patronize rural telephones, and the more progressive and wealthy element to use automobiles for their town trips. A perusal of the pages of the agricultural publications, with their advertisements of gasoline engines, automobiles and all kinds of labor-saving machinery, verifies the evidence of prosperity in the country, as these advertisers do not spend their money in barren fields. The extensive range territory of the West is no longer the scene of the round-up of herds that practically were self-supporting. Instead we find the fenced, cultivated fields of the homesteaders, who crops the virgin soil without proper regard for rotation of crops, or, through scientific fertilization, replacing in the soil the fertility taken therefrom by the grain.

Cost of Grain.

The cost of grain is dependent, in a large measure, upon the cost of land, adding the cost of labor to put in the crops, tend and harvest them. Reports show an increasing difficulty in obtaining harvest hands at the proper season of the year, and even those obtainable receive a greatly increased wage. The Department of Agriculture, in its statistical publications, compiles detailed information showing the average prices

of grain, as well as the range compared with previous years, so it is not necessary to detail the figures. The scientific breeding of corn, in order to produce a maximum yield per acre, will have more and more attention on the part of the agriculturist. The making of corn syrup, corn breakfast foods, and the many other new uses for corn have tended to increase the demand and, consequently, the price, and it is natural for the farmer to make the mistake of placing present realization ahead of future benefit by taking the high cash price for corn rather than feeding it to live-stock. He should figure that at least one-third of the value of the grain fed to live-stock remains on the farm, in the form of fertility obtained from natural fertilizer, and should deduct from the selling price of his grain this percentage, the same as one would charge depreciation and "wear and tear" on an investment.

A realization of the profitableness in improving the breeds of live-stock is shown by the activity of the Agricultural Experiment Stations and the continual increase in entries at the various live-stock shows and State fairs held throughout the country. This is a step in the right direction, as it costs no more to care for and feed—up to a certain point—a well-bred animal than it does a "scrub." The more scientifically balanced ration will yield the greater amount of meat per dollar invested.

The Packer's Profit.

A consideration of profit from a financial standpoint is one proposition, and the profit per dollar on sales is another. The directors and officers of a corporation are responsible to their stockhold-

ers for a fair return on the investment, and the rate of earning on the stock does not reflect the percentage of profit charged on the business conducted. If a corporation, through turning its capital three or four times, is enabled to make a good showing, it is much better

creased supply of live-stock, with a consequent decrease in volume, would naturally increase the percentage of profit. Remember the packer's profit—as far as Swift & Company is concerned—during 1909 was three and one-quarter per cent.

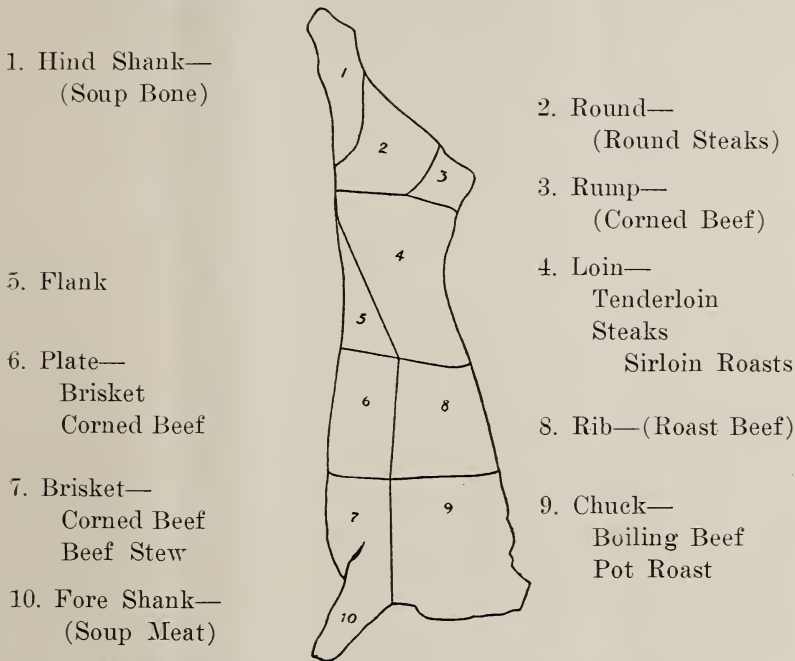


DIAGRAM SHOWING THE USUAL COMMERCIAL CUTS OF BEEF.

The sections numbered 4 and 8 (loin and rib), comprising only 26 per cent. of the beef, are those now most in demand; consequently the balance (74 per cent.) has to be sold at a correspondingly lower price to obtain a reasonable average price for the entire beef.

for all concerned than the realization of one-half or one-fourth as great a percentage of profit on a watered capital three or four times as large. As previously stated, Swift & Company charged three and one-quarter cents on each dollar's worth of live-stock purchased and turned into meat foods or by-products during 1909, and it was only through economical operation and a small margin of profit on a large volume that the rate of profit was this small. A de-

The Retailer.

The retailer does business under a large expense for rent and other fixed charges, and most of them could handle a larger volume of business without any increase in these fixed charges, with the consequent result of being able to do business on a smaller percentage of profit. The progressive retailer realizes this, and is continually advertising through the local press and neighborhood circulars to increase his business

as much as possible. Meat is of different grades, practically the same classification governing as that for any other commodity. The highest quality, on account of the scarcity and excessive call, demands the highest prices. The retailer naturally buys such grades and cuts of meat as he feels he can sell to advantage in meeting the demand of his trade. The terms by which the different grades of beef are usually designated are: No. 1 grade, choice quality; No. 2 grade, good quality; No. 3 grade, medium quality. I should say that fifty per cent. of the meat at present marketed is what is known as No. 3 grade, while the No. 1 grade is in great demand and relatively more expensive. Thus it will be seen that the quality of the meat should be taken into consideration when comparing prices and the cost of former food prices with those of to-day. The extensive demands of the consumer for the highest grades of meat and the choicest cuts, coupled with, in most cases, immediate delivery, tend to greatly increase the retailer's cost of doing business.

The Consumer.

The majority of the present discussion regarding prices emanates from the city residents, where the population is continually increasing without a corresponding increase of farm production. I do not want to appear in the role of criticising the American housewife, but in figuring the cost of present-day living she should analyze her household expenses for the week and see if there is not too much waste in lack of personal attention to the purchase of supplies and providing an interesting variety in the meat dishes served in the home. Of course a steak or a roast or beef is very easily cooked, and there is not much question about

the result; but to make a good veal potpie, beef stew, a properly prepared sirloin butt in the fireless cooker requires a little more personal attention, but the saving in first cost of purchase and fuel used in cooking will more than repay the time and attention given to learning the proper methods for doing these things. The Europeans do this to perfection.

An editorial in the Chicago Tribune of February 1st, commenting on a statement made by Archbishop Ireland, says: "Americans do not know how to save in cooking, and what they do cook they don't know how to prepare in a manner to make it palatable and health-giving." The editorial comment was as follows:

Wise words from a wise man. The art of cooking in the United States is, relatively speaking, a primitive affair. Compared to French cooking, it is as a string quartet to a full orchestra. It is good at its best, but its range is narrow. Good cooking is an illustration of the proverb that "necessity is the mother of invention." The American housewife has had little acquaintance of late years with that stern teacher. She has had the best of cuts at her command. She has had nothing to disguise or dress up. So she has despised all those variations on the main theme, to use our musical metaphor, which make cooking in Europe so full of stimulating variety. The result is a paradox. With us abundance has wrought scarcity; in Europe relative scarcity has brought what is really abundance. If the high cost of living should awaken American inventiveness in this field, it might be classified as a blessing. The waste charged by Archbishop Ireland is a serious economic drain, to say nothing of its social effect. People of small means might live twice as well as they

do if they cooked as they cook in France or Italy, and they would be better nourished, as well as better off financially. It is among our wage earners and men who support families on small salaries that the need for better cooking is a critical need.

This, coming from a man who is a close student of economical conditions as they exist in the country today, gives a very practical viewpoint that should be given serious consideration by every

housewife. This careful attention to household detail will bring wonderful results. As men watch carefully the smallest factors of their business, so the woman must keep a careful eye upon household expenses. The high cost of living will be reduced perceptibly if the housewives will use care and ingenuity in the selection and cooking of meats and vegetables. This phase of household expenses must always be kept in mind.—Leslie's Weekly.



Stock Yards Scene

Sanitary Milk Production

By Richard Faxon

"We can live without reading; we can live without books;
But civilized man cannot live without cooks.
We can live without vegetables; we can live without silk;
But the great human race cannot live without milk."

The production of milk to supply the demands of our great centers of population has grown rapidly. It has become the most important item of all on the list of food materials. It offers splendid opportunities for the exercise of judgment and executive abilities in the management of a dairy herd and the subsequent distribution of the product. The public is awake to the fact that it has not been securing milk as clean as other foods and it will demand that it gets it, and the dairyman who is really to meet this demand will reap his reward. Milk is sure to advance in price to a point where dairying will pay better than any other line of farming. In parts of Europe the cow is holding possession of the land when the price has reached a point that has driven the steer, sheep and pig from the farm. The cow is the cheapest producer of human food or our domestic animals. We do not expect to see the steer crowded off the earth, but we do expect to see the dairy cow more fully recognized as the years pass.

Dairying is susceptible of an almost unlimited development under conditions of dense population. In the first place, dairy cows do not require any extensive pasture. They may be more economically kept on silage, roots, hay and soiling crops fed to them in the stable or

open shed with the addition of a suitable grain ration. The acreage required, therefore, for the maintenance of dairy stock is not a serious proposition, partly for the reason that dairy cows are able to utilize legumes and other coarse foods to an extent which is possible with no other animal.

In order to start in the right way in the dairy business or to improve an already existing herd, it is necessary to select cows with reference to their milk yielding properties. There is a dairy type as well as a beef type of animal. It differs from the beef type in that the form of the dairy cow is in general that of a wedge, the body being deeper behind than in front with a large capacity for digestive organs and milk production. The general outlines may also be angular at least far more so than in the beef type. Individuality, however, is the keynote of success in selecting dairy cows. The dairyman does not keep his cows because they conform to a certain type, but because they give milk, and the only reason for selecting the improved dairy breeds for this purpose is that a larger percentage of these animals are likely to be good milkers. In choosing a breed one of the improved breeds should be chosen. The choice will depend largely upon the farm's location, but as we are starting in to sell whole milk a breed with an abundant milk yield is required. Another factor may also enter into the problem. If we are supplying a fancy trade which demands a milk high in fat we may have to select a breed giving a richer milk. The Holsteins are the largest dairy breed in the United States. One of its chief virtues is its enormous

milk productions. In that point it is superior to all other breeds. The percentage of fat, however, is somewhat lower than in other dairy cows. Ayrshires, have had so far, no such examples of enormous yields as we find in the Holsteins, Jerseys and Guernsey breeds; but the average milk yield from these cows is as great as any other breed. Guernseys are well adapted to climate of moderate severity. They give milk of high fat content and are economical users of food stuffs. Jerseys are perhaps better known than any other breed of dairy animals in the country. They yield milk of high per cent. of fat. They are small in size and tend to be delicate. From these four breeds probably one can be chosen to fit any requirement. If calves are required which can be fattened for beef however, probably the milking Short Horn or Red Polled might be chosen. From these brief descriptions it is seen that the Holsteins lend themselves best to the production of market milk. The Ayrshires may be classed between the Holsteins and Island breeds and are somewhat more hardy than the Guernseys and Jerseys. Jerseys and Guernseys can be kept to satisfy a fancy trade requiring a milk rich in fat.

After a choice has been made of the breeds which best fit into your conditions, the method of establishing the herd may be considered. Two methods may be employed, according to the amount of capital available. For one with limited capital grade cows could be purchased which could be graded up by means of a pure bred bull. Later a few pure bred cows could be added and a pure bred herd started from them. If plenty of money is available all pure bred stock may be purchased at the outset, which would greatly hasten the establishment of the herd.

The next important factor in milk production to be considered is the cow stable. This may be located wherever convenient, providing it is not so near the house as to be objectionable. It should be located so that it can be well drained and so that the surface drainage will not run towards the house. The cow stable may be the first story of the barn or a one-story building. The two-story barn makes a warmer ceiling and gives opportunity for a longer ventilating flue. It has the objection, however, that there is more likelihood of dust sifting through the floor from the hay and straw stored above. The great objection to the one-story building is that it condenses moisture, which freezes in cold weather and melts the first mild day and drips on to the cows, later causing the ceiling to mold and decay.

The stable floor should be made of cement. This is impervious to moisture and insures a dry stable and can be easily kept clean. The mangers should be made of the same material and finished with a smooth surface to aid in cleaning them. The platform for the cows to stand on should be 4 feet 6 inches in length; the gutter not less than 14 inches wide and 8 inches deep and the passage back of the cows not less than 4 inches in width. The precautions taken in constructing a sanitary dairy barn will have been in vain if proper care is not taken with the stock. The cows should be kept in a healthy condition. Any tuberculosis animals should of course be done away with. The cows should be kept clean and furnished plenty of bedding. Before milking, the udders should be wiped with a damp cloth, as this has been found to be a fruitful source of contamination. In fact, contamination of milk usually begins with the act of

milking. If the udder and flanks of the cow are covered with dirt, the process of milking will dislodge a greater or less amount of this filth, causing it to fall into the pail. The amount of filth that may be on a cow will depend very much upon the condition of the stable yard, and the floor, gutter, and bedding of the stable. As to the amount of filth that will get into the milk and its affect on the product, reports from the Illinois Experiment Station and the Storrs Experiment Station are here quoted: "Illinois—"The average weight of dirt which falls from muddy udders during milking is 90 times as great as that which falls from the same udders after washing, and when udders are slightly soiled it is 32 times as great." Storrs—"Wiping the flank and udder of the cow with a damp cloth just before milking is a very efficient method for reducing the number of bacteria which falls into the milk pail." An average of 13 experiments at the Storrs Experiment Station showed the following results: Bacteria in milk from unwiped udders, per cc 7058; bacteria in milk from wiped udders, per cc 716. Decrease, due to wiping, 6,342.

The advantage of cleanliness in dairying are shown in a marked degree in the above results. For the production of sanitary milk cleanliness must be faithfully applied all along the line. The gains in clean milk are further borne out by the methods employed in milking. Dry milking is much to be preferred to wet milking from the standpoint of clean milk. The milker wets his hands by milking a few streams over them and keeps them wet by repeating the operation. The filth on the udder will ooze out under and through the fingers and drip into the pail. We too often find milkers wearing clothing that has done duty for every other work

about the farm. Such clothing may contain dirt from the hog pen, the chicken coop, the horse barn or the swill barrel, and is entirely unfit to be worn during milking. A clean white milking suit has a two-fold effect. It will not of itself contaminate the milk, and if the milker is required to keep such a suit clean he must of necessity keep everything with which he comes in contact clean.

After the milk is drawn from the udder it should not sit around the stable or elsewhere until the animal heat is removed. It should be at once run over an aerator, and cooled down to as low a point as possible or put into cans and set in pools of cold water and occasionally agitated, until as cool as the water and shipped at a low temperature, as soon as possible to the distributor. There should be on every dairy farm a neat, clean milk house, where cooling should be done and where the milk should be kept while it remains in the hands of the producer. This house should be located away from the buildings where the air will be pure and should be used for milk and milk only, and always be kept clean.

Many epidemics of infectious diseases have been traced to the milkers in dairy herds. The dangers of contamination of the milk supply through diseased cattle are just beginning to be appreciated. The water supply of the dairy farm is a most important factor in producing sanitary milk. Without pure water, clean milk is impossible. The methods employed by the dairyman are twice as important as the tools with which he works. If he is naturally clean in his habits, a little instruction will enable him to do satisfactory work; but if his disposition is toward uncleanness no amount of instruction or police regulation will change his methods. The tools

with which a man works can only to a certain extent determine the fineness of his results. As poor work can be done with good tools and good results are sometimes obtained with a poor equipment. In shipping milk to the city exposed to unfavorable temperatures, delays in transit, careless handling by employees, and delivery in unfit condition should be guarded against.

A. D. Melvin has classified the milk supply of a city as certified, inspected and pasteurized milk. The use of the term "certified milk" should be limited to milk produced at dairies subjected to periodic inspection and the products of which are subjected to frequent analysis. The cows producing such milk should be properly fed and watered, free from tuberculosis, as shown by the tuberculin test, and from all other communicable diseases, and from all diseases and conditions whatsoever likely to deteriorate the milk. They are to be housed in clean stables, properly ventilated, and kept clean. All those who come in contact with the milk must exercise scrupulous cleanliness and such persons must not harbor the germs of typhoid fever, tuberculosis, diphtheria and other infections liable to be conveyed by the milk. Milk must be drawn under all precautions necessary to avoid infection, and be immediately strained and cooled, packed in sterilized bottles, and kept at a temperature not exceeding 50 degrees F. until delivered to the consumer. Pure water as determined by chemical and bacteriological examination is to be provided for use throughout the dairy farm and dairy. Certified milk should not contain more than 10,000 bacteria per cc, and should not be more than 12 hours old when delivered. Such milk, of course, cannot be produced by every farmer, but an expensive equip-

ment and stable is not a necessity in the production of pure milk. It must, however, be well lighted, ventilated and be kept in a sanitary condition.

Class 2, or inspected milk, is to be clean, raw milk from healthy cows, as determined by the tuberculin test and veterinary physical examination; the cows to be housed, fed and milked under good condition. Dairymen must use clean methods and pure water. Bacterial count must not exceed 100,000 per cc. Milk to be delivered in sterilized containers, and is to be kept at a temperature not exceeding 50 degrees F. until it reaches the consumer. There should be no lower class than this, as it should be possible for all dairymen to comply with the very reasonable requirements. Such is not the case, however. Class 3 is pasteurized milk. This includes all milk from dairies not able to comply with the requirements for classes 1 and 2. This milk is to be clarified and pasteurized at a central plant, either of private or public enterprise, placed in sterilized containers and delivered to the consumer at a temperature not to exceed 50 degrees F. The advantage of pasteurization is that it is a cheap and effective means of preventing the transmission of infectious diseases, such as tuberculosis, typhoid fever, diphtheria, scarlet fever, etc., commonly spread by milk. It also, probably by destroying bacteria, increases the keeping qualities of the milk and has a favorable influence in preventing or ameliorating the severity of some of the intestinal disorders of children caused by impure milk. Even with the efficient inspection system, it will not be possible for some time to come to obtain a sufficient supply of wholesome raw milk, and for this reason pasteurization is recommended as a temporary make-

(Continued on page 23.)

Guernsey Cattle

By H. M. Call

The native home of the Guernsey cattle is the Island of Guernsey in the English Channel, where the breed was originated and has since been developed. The island is small and maintains some 5000 head of cattle. It is a very healthful place, the climate being most balmy the year round. The cattle are kept in small herds and when in pasture, each animal is tethered, obtaining the greatest possible use of the pasture.

The foundation of the breed lay in the admixture of the Little Black Britany and the Large Red Normandy breeds which were brought from the neighboring coast of France. To the Normandy breed is due many of the present characteristics of the Guernsey. They have been protected at home for nearly one hundred years by the exclusion of all other breeds from the island. This is sufficient proof of the purity of the breed and has assisted in establishing them on a uniform and high basis.

The introduction of the Guernsey to America dates back to the early part of the last century. A few were imported from time to time, but it has only been during the past fifteen years that the merits of the breed have been recognized.

The temperament of both the bulls and cows of this breed is quiet and uniform. The bulls are docile and the cows have been handled and developed on the island in a manner that would indicate gentleness. These traits have been instilled into the animals throughout their development by their island owners. This even temperament has been very conducive to the adaptability of the

breed to the various climates and conditions of the world at large. The one great hindrance of their widespread introduction has been the fact that the supply is quite limited.

The chief characteristic of the Guernsey is her economical production of the highest natural colored milk, cream and butter; combined with these there is also a very desirable flavor. In these respects they have excelled and proven themselves superior in many trials.

While the Guernsey is preeminently a cream and butter breed, together with the color, flavor and large amount which she is able to produce, has placed her as a favorite to the choicest trade in milk and cream. Because of the fact the breed has proven itself as being in the front rank as producers of the highest grade of dairy products, it has appealed to both the critical and progressive dairymen.

The ability of the Guernsey to produce butter fat and butter at a low cost demands the careful attention of the dairymen. At the New York Experiment Station, where several of the prominent dairy breeds were carefully tested, the results showed them to be the most economical producers. Not only here have they proven themselves superior in this respect, but in many other places.

The merits of the Guernsey cow are fast becoming known, especially in the dairy sections of the country, where both the pure bred and the grade are gaining preference. The ability of the Guernsey bull to stamp the desired characteristics of the breed on his offspring makes him most valuable for improving the common dairy herd.

In the last few years great progress has been made by this breed. At the present time there are 39,500 registered animals, the larger part of which have been placed in the register during the last ten or twelve years.

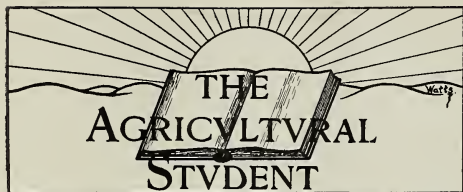
The demand for the Guernsey has been so great she has not been in the hands of speculative breeders. It is the ordinary, workable, every-day life of the dairy farm that she has excelled in. She is the old time "yellow and white cow, beautiful in appearance among the velvety green lawns and pastures, imparting in the midst of winter the high natural golden color and soft flavor of the June pasture months."

At present the Guernseys will be found largely in New England, throughout New York, New Jersey and Pennsylvania. In Ohio, Wisconsin and Eastern Minnesota they are fast gaining ground. There are also quite a number scattered throughout Canada, California, Virginia and some of the Southern states.

Through the careful and pure development of the breed and the present rate of their advancement due to their true merits, there appears to be a great future before them. It has been truly said that the Guernseys have but to be tried to be appreciated.



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EDITORIAL

The cattle industry of this country is one of great magnitude. It is almost beyond our imaginative power to realize the vastness of the business. By means of statistics we are able to appreciate to some extent the situation.

At the present time there are about 47,279,000 head of cattle in the United States other than milch cows, there being approximately 22,820,000 of the latter. In the production of beef cattle Ohio ranks fourteenth. From a state point of view in importance of live stock they rank as follows: Texas,

Iowa, Illinois, Kansas, Nebraska and Montana. However, in a general sense from the standpoint of meat production, Iowa is the great live stock state.

For the past seventy years the average consumption of meat in the United States has steadily declined. This has been due largely to the increase in population and the exportation. These factors have been instrumental in producing a scarcity and consequently higher prices result. Settlement has gradually invaded the Western ranges, cutting off a great resource in cattle production. The free grazing land has been constantly decreasing, while the population has been steadily increasing. The corn crop, a great factor in the cattle industry, is likewise not keeping pace with the needs of the country and consequently the farmers are not able to make good the deficiency in the number of Western cattle.

At the present time there are approximately 2,100,000 fewer cattle in the United States than a year ago. Not only has this been the situation for one year, but for the three previous years. The result of this decrease in the number of cattle has been somewhat sudden and recently somewhat painful. In the past three years the export, which represents the surplus, has fallen off nearly one-half. The ranges are a thing of the past, and the Eastern farms where cattle and corn are raised cannot make up the deficiency. As the surplus decreases the price of cattle advances, and an increased production to lower it seems out of the question, for the old conditions are no more.

For some time past a great deal of discussion has taken place concerning the high price of meat products and the causes which have been influential in bringing them about. It has been the all important subject of discussion and

many unkind words have been said of those who were trying to find out the real cause of the situation. In many cities the boycotting of the butcher was advocated as a remedy for the supposed evil and all sorts of things were supposed to be the cause.

The old law of supply and demand still seems to have considerable to do in establishing prices for any commodity, whether from the farm or from the factory.

One of the chief causes of the situation seems to lie in the great demand for dairy products. This has induced the farmers to raise only dairy cattle and what calves were not needed for this purpose were sold to the butcher for veal. The high price of this product was also a great inducement along this line. It seemed like folly to the farmers to refuse ten or fifteen dollars for a veal calf when a year from that time it would undoubtedly only bring twice that amount.

The great wave of agitation over existing high prices is lessening; with the exception of meats, other products have gradually returned to normal. The people are taking a more sensible and rational view of the situation. Instead of denouncing those who were trying to solve the problem they are beginning to see for themselves the real state of affairs as they now exist.

Dairying is one of the great phases of agriculture that is fast gaining ground and great emphasis is being placed on the necessity of a distinct dairy animal, one that will use food economically in the production of high per cent. milk.

There are at present several breeds that are classed as typical dairy animals, but the one sought by the dairy-

men is the large producer of rich milk. This is also the aim of the breeder, which by means of selection, he is striving to attain.

The dairymen are fast realizing the necessity of more business-like methods in their work. In order to obtain the real value of a cow an accurate account must be kept of what she consumes and the amount and quality of the output. This is comparatively little work and the operations are very simple, but the results are often astonishing. By this means the "Star Boarders" are removed from the herds and sent to the butcher, where they rightly belong.

In no agricultural pursuit is the necessity of business methods more important. It is a money proposition and offers a great opportunity for the making or losing of large profits.

The growing need of more accurate methods have resulted in the organization of many cow testing associations in various parts of the country. Although these are of recent origin and are as yet few in number, they are fast gaining ground, are proving themselves to be efficient, economical, and are awakening the farmers to the latent possibilities of the dairy industry.

Sanitary Milk Production

(Continued from page 19.)

shift for dealing with milk of doubtful quality. Pasteurization will not take the place of a careful and adequate inspection system. Such inspection systems should eventually obviate the necessity for pasteurization, but this cannot be accomplished until the consumer is willing to pay the increased cost of pure milk, not until the producer works on a higher plane than the average do at present.



NEWS NOTES



The recent appropriation bill which has been passed by the House looks good for the Agricultural College, especially the Extension department, which received \$50,000, as compared with \$20,000 last year. The Animal Husbandry department received \$10,000 for live stock and maintenance, which is also an advance from last year. The addition to the farm and the \$10,000 for a poultry department were not granted. Although this is far from all that was asked for and is really needed, yet in comparison with the appropriations of the other colleges the Agricultural College fares well.

Professors Price, Plumb and Erf attended an agricultural meeting on April 2nd at the home of O. C. Barber, Barberton, Ohio. Mr. Barber has recently constructed some fine new buildings, the most extensive of which is his dairy barn. He is going into the Guernsey business on a large scale, his aim being to build up a herd of one thousand head. He is also entering into the poultry business on quite a large scale, having constructed a poultry house 1200 feet in length.

W. C. Lassiter, who has been connected with the Agronomy department for the past year, has gone to Arkansas, where he has obtained a position as Assistant Agronomist at the Arkansas Agricultural Experiment Station.

Richard Faxon and L. L. Mowls have completed their work in the Agricultural College and have left until June, when they return to receive their degree.

G. A. Cleland, a former graduate of the College of Arts, who has been taking the two-year course in Agriculture, has obtained a position as manager of a 450 acre farm, 200 acres of which is devoted to fruit growing, for E. J. Riggs of Gallia County. Mr. Riggs is a former O. S. U. graduate and is now inspector in the State Dairy and Food Commission.

In a recent number of the Agricultural Extension Bulletin there appeared an article which was a very extensive treatise on the "Country Schools of Ohio," by Professor A. B. Graham, Superintendent of the department.

In the next issue of the Extension Bulletin will appear an article on the "House and Blow Fly," by Professor J. S. Hine. The subject is treated with special reference to the spread of disease by these insects.

The April meeting of the Agricultural Society will be held jointly with the Country Life Club. The societies will be addressed by Prof. F. R. Marshall, his subject being "Four Agricultural Colleges."

The past winter has been very destructive on bees, the University having lost all of its colonies. Reports from various other places show that this loss has been quite general throughout the state.

Prof. C. S. Plumb will deliver a lecture before the East Tennessee Farmers' Convention, to be held at the University of Tennessee on May 17 and 18.

Some Farm Conditions in Georgia

By W. C. Lassetter

About 70 per cent. of the total area of Georgia is in farms. Of these farms 37 per cent. are operated by negroes. 86 per cent. of whom are renters. This leaves a balance of only 14 per cent. of negro farmers who own their farms. The average size of the farms has decreased very much, it being in 1909, 117.5 acres, while in 1850 the average size was about 400 acres.

Cotton may be said to be the money crop of Georgia, the state being second in its production. Although a large percentage of the farmers grow sufficient corn, wheat, oats, and hay for their home use, cotton is the crop they look to pay all bills at the end of the year.

Conditions at the close of the war and during the reconstruction period left the rural people in severe straits. Many who had been land owners found themselves without land or homes. Others who had been renters had nothing to live on while they made the next year's crop. Since cotton was the only crop of any value which could be turned into cash, they had no source of income during the long months in which the cotton was being planted, cultivated and harvested. Such conditions resulted in the development of a system of crop mortgaging which has proved to be the bane of the South. Under this system the merchant takes a mortgage on the renter or small landowner's crop before it is even planted and agrees to furnish him with the absolute necessities of life while he is making that crop. As a result the merchant has the farmer immediately in his power where he can charge him most any price he likes for his goods and likewise has control of the former's cotton crop.

In these and other ways the wily merchant usually sees that his men are left in such condition at the end of the year that they will have to mortgage their crop the coming year in order to secure provisions while making that crop.

These merchants will take a mortgage on no crop other than cotton and consequently the farmer has to grow it at the expense of his home crops, such as corn, wheat, oats, and sweet potatoes. This naturally prevents a thorough system of crop rotation and as a result of the continuous growing of cotton year after year, the soil rapidly becomes exhausted. After a certain stage of exhaustion has been reached the only thing which can make its cultivation at all profitable is the liberal use of commercial fertilizers. Again the farmer is at the mercy of the merchant because his living expenses must be cut down in order that a part of that mortgaged crop can go to pay for the fertilizers required to make it.

A striking difference lies in the amount of land taken care of by one man in some sections of the South compared to the man in the North. Over quite an area of the South one man can cultivate only 20 to 25 acres, while over a correspondingly large area in the North and Northwest one man with one hand takes care of 160 acres. Thus while 160 acres of cultivated land in the South must support six families, a like amount in the North has only to support two families. The cause of this lies in the more intensive system of farming necessary to produce cotton as compared to the more extensive system to which other crops and live stock raising are adapted.

Soil erosion is another serious factor which a large number of Southern farmers have to provide against. The man there who runs his rows down a slight incline will find his field washed into gullies before spring is past. The rainfall being between 45 and 55 inches per annum and the soil being light and open with an impermeable subsoil, and low in lime and humus, are factors which make side-hill erosion quite serious. Much of the fertility of southern farms is carried away in this manner.

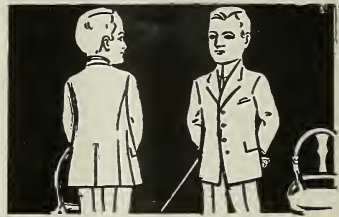
A system of terracing is necessary to prevent this loss. A terrace is a bank of earth thrown up with a large two or three-horse plow and is made very nearly on a level, being given only a few inches fall from one end to the other. This fall is just sufficient to carry the water off without serious washing. Since the terraces are necessarily crooked and non-parallel, the rows following them are also crooked and a large number of short rows is unavoidable. This makes the use of improved machinery very impracticable.

In spite of these disadvantages in certain sections, however, the state as a whole offers exceptional opportunities in agriculture. The climate is favorable for the growth of a large variety of crops, on one of which the, the cotton crop, the South has a monopoly. In addition to ranking second in the production of cotton, Georgia ranks first in the production of watermelons and second in the production of peanuts. Corn, oats, wheat, rice and sugarcane are by no means unimportant crops, while the sweet potato must not be forgotten. In the southern-most part of the state oranges, lemons, pineapples, bananas, and olives are grown to quite an extent. Both the soil and climate are excellently adapted to all forms of

market gardening. All sorts of fruit can be grown. Peach growing is rapidly becoming one of the most important branches of agriculture in the state.

The unusually large variety of crops in connection with a climate most favorable to health, the cheapness of land and labor, access to Eastern markets, together with the rapid industrial development of the state, will make Georgia one of the leading agricultural states in the Union. Now that the free lands of the West are about all taken, it is due time that the cry of Horace Greeley, "Go West, young man, go West," should be changed to, "Go South, young man, go South."

The new bulletin made up under the semester plan, for the College of Agriculture and Domestic Science, has just been issued.



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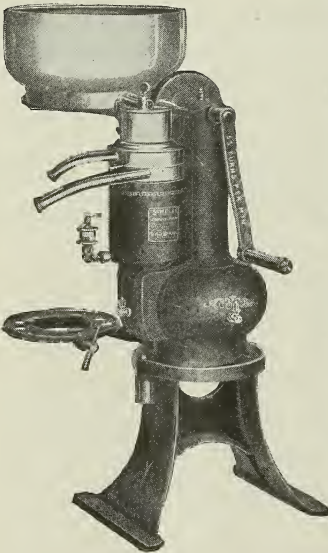
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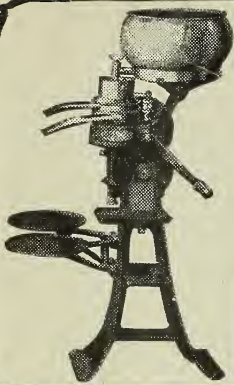
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